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| 09/917,068 | 07/26/2001 | Wen-Yen Hwang | PAT030 | 6245 |
| 27543 | 7590 | 01/11/2005 | EXAMINER | |
| APPLIED OPTOELECTRONICS, INC. | | | RODRIGUEZ, ARMANDO | |
| 13111 JESS PIRTLE BLVD. | | | ART UNIT | |
| SUGAR LAND, TX 77478 | | | PAPER NUMBER | |
| | | | 2828 | |

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917,068

Applicant(s)

HWANG ET AL.

Examiner

ARMANDO RODRIGUEZ

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-13, 16, 17, 20 and 37-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-13, 16, 17, 20, 37-39 and 41-46 is/are rejected.
- 7) ☒ Claim(s) 40 and 47 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 15, 2004 has been entered.

Claim Objections

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 39-48 have been renumbered 38-47.

Response to Amendment

Claims 11-13,16,17,20,37-47 are pending.

Claims 1-10,14,15,18,19,22-36 have been canceled.

Response to Arguments

Applicant's arguments filed December 15, 2004 have been fully considered but they are not persuasive.

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Regarding applicant's argument on page 5 of the Remarks/Arguments, which pertain to the periodic rows reflection means as not being taught by the cited reference to Mukaihara et al (PN 6,545,296). The cited reference does disclose reducing specular reflection by diffusely reflecting light using a an uneven surface (roughened), which is one of the method to reduce specular reflection as defined by applicant in page 4 of the Remarks/Arguments; but the cited reference does not disclose the particular shape recurring at regular intervals as implied by applicant. However, in accordance with MPEP 2144.04 IV (B) Changes in shape

In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.).

In the instant application the change in geometrical cross section or shape is considered a design preference because either a periodic or roughened surface will provide a reduction in reflection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11,12, 20,21,37,38,39,41,42 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukaihara et al (PN 6,545,296).

Regarding claims 11 and 20,

In figure 6A Mukaihara et al illustrates a semiconductor emitting laser for optical communications having a substrate (100), where the substrate includes a surface (100a) having continuous and unevenness which provides diffused reflection, as described in column 5 lines 7-10.

Mukaihara et al is silent as to the back surface of the substrate comprises periodic reflection means for reducing specular reflection light into the active region.

However, in accordance with MPEP 2144.04 IV (B) Changes in shape
In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.).

In the instant application the change in geometrical cross section or shape is considered a design preference because either a periodic or roughened surface will provide a reduction in reflection.

Mukaihara et al does not explicitly describe a VCSEL.

However, VCSEL are semiconductor lasers, which are notoriously well known in the art and have become the dominant light source for optical communications.

Therefore, it would have been obvious to one of ordinary skill in the art to provide a surface disposed on the substrate of a VCSEL, as disclosed and illustrated by

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Mukaihara et al, because it will redirect the laser beam away from the active layer to provide stable operation, as disclosed in column 3 lines 3-16 and in the abstract.

Regarding the array of claim 20, in accordance with *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960), the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced.), as in the present case the mere duplication of lasers does not provide a new or unexpected result since both prior art and the application will provide an output laser beam.

Regarding claims 12,21,

Mukaihara et al is silent as to the periodic reflection means comprise rows having a triangular cross section.

However, in accordance with MPEP 2144.04 IV (B) Changes in shape *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.).

In the instant application the change in geometrical cross section or shape is considered a design preference because either a periodic or roughened surface will provide a reduction in reflection.

Regarding claims 37,39,41,46,

In figure 6A Mukaihara et al illustrates a semiconductor emitting laser for optical communications having a substrate (100), where the substrate includes a surface

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(100a) having continuous and unevenness which provides diffused reflection, as described in column 5 lines 7-10.

Regarding claims 38,42,

Mukaihara et al is silent as to the periodic reflection means comprise rows having sinusoidal cross section.

However, in accordance with MPEP 2144.04 IV (B) Changes in shape
In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.).

In the instant application the change in geometrical cross section or shape is considered a design preference because either a periodic or roughened surface will provide a reduction in reflection.

Claims 13,16,17,43,44,45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukaihara et al (PN 6,545,296) in view of Gaylord et al.

Regarding claims 13,16,17,43,44,45,

The use of different etching techniques to obtain a structure, which provides scattering on different materials as dielectrics, semiconductors and metals is notoriously well known in the art, as described by Gaylord et al in the abstract.

Allowable Subject Matter

Claims 40 and 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

None of the prior arts alone or in combination discloses the claimed VCSEL with the recited limitations of dependent claims 41 and 47, having in particular the limitation of the periodic row reflection means causing specular reflection, of light impinging on the periodic rows, away from the active region, which implies that the angle of reflection equals the angle of incidence.

Conclusion

This is a request continued examination of applicant's earlier Application No. 09/917,068. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARMANDO RODRIGUEZ whose telephone number is 571-272-1952. The examiner can normally be reached on 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


ARMANDO RODRIGUEZ
Examiner
Art Unit 2828


MINSUN HARVEY
SUPERVISOR
Art Unit 2828

AR/MH